CLAIMS

- 1. A polyethylene wax defined by the following features (i) to (iv):
- (i) said polyethylene wax is an ethylene homopolymer or a copolymer of ethylene and at least one olefin selected from α -olefins of 3 to 20 carbon atoms,
 - (ii) a ratio (Mw/Mn) of the weight-average molecular weight (Mw) to the number-average molecular weight (Mn), as measured by gel permeation chromatography (GPC), is in the range of 1.7 to 4.0,
 - (iii) the softening point is not higher than 125°C, and
 - (iv) the penetration hardness is not more than 15 dmm.

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2. The polyethylene wax as claimed in claim 1, which is a copolymer of ethylene and at least one olefin selected from α -olefins of 3 to 20 carbon atoms and has a ratio (Mw/Mn) of a weight-average molecular weight (Mw) to a number-average molecular weight (Mn), as measured by gel permeation chromatography (GPC), of 2.6 to 4.0, a softening point of not higher than 110°C, a penetration hardness of not more than 15 dmm, an intrinsic viscosity [η], as measured in decalin at 135°C, of 0.15 to 0.50

dl/g, a ratio (Mz/Mw) of a z-average molecular weight (Mz) to a weight-average molecular weight (Mw), as measured by gel permeation chromatography (GPC), of 1.5 to 2.0, a density of 880 to 910 kg/m³ and an acetone extraction quantity of not more than 6% by weight, wherein the softening point (Ts (°C)) and the penetration hardness (Y (dmm)) satisfy the following relationship (I):

$$-0.53$$
Ts + 62 > Y > -0.53 Ts + 53 (I).

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- 3. The polyethylene wax as claimed in claim 1, which is an ethylene homopolymer or a copolymer of ethylene and at least one olefin selected from α-olefins of 3 to 20 carbon atoms and has a ratio (Mw/Mn) of a weight-average molecular weight (Mw) to a number-average molecular weight (Mn), as measured by gel permeation chromatography, of 1.7 to 3.3, a softening point of 88 to 125°C, a penetration hardness of not more than 7 dmm and an intrinsic viscosity [η], as measured in decalin at 135°C, of 0.05 to 0.20 dl/q.
 - 4. The polyethylene wax as claimed in claim 1, which is prepared by the use of a metallocene catalyst.

- 5. A lost wax composition for precision casting, comprising a polyethylene wax defined by the following features (i) to (iv):
- (i) said polyethylene wax is an ethylene homopolymer of a copolymer of ethylene and at least one olefin selected from α -olefins of 3 to 20 carbon atoms,
 - (ii) a ratio (Mw/Mn) of the weight-average molecular weight (Mw) to the number-average molecular weight (Mn), as measured by gel permeation chromatography (GPC), is in the range of 1.7 to 4.0,
 - (iii) the softening point is not higher than $125\,^{\circ}\text{C}$, and
 - (iv) the penetration hardness is not more than 15 dmm.

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The lost wax composition for precision casting as claimed in claim 5, wherein the polyethylene wax is an ethylene homopolymer or a copolymer of ethylene and at least one olefin selected from α-olefins of 3 to 20
carbon atoms and has a ratio (Mw/Mn) of a weight-average molecular weight (Mw) to a number-average molecular weight (Mn), as measured by gel permeation chromatography, of 1.7 to 3.3, a softening point of 88 to 125°C, a penetration hardness of not more than 7 dmm and an

intrinsic viscosity [η], as measured in decalin at 135°C, of 0.05 to 0.20 dl/g.

- 7. The lost wax composition for precision casting so as claimed in claim 5, wherein the content of the polyethylene wax is in the range of 5 to 50% by weight.
- 8. The lost wax composition for precision casting as claimed in claim 5, wherein the polyethylene wax has 10 an acid value of 0.5 to 5.0 KOH·mg/g.
 - 9. A method for forming a model for precision molding, using the lost wax composition for precision casting of claim 5.

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